Adolescent Smokers' Provision of Tobacco to Other Adolescents

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ABSTRACT

Objectives. This study examined adolescent smokers' provision of tobacco to other adolescents.

Methods. Data from a survey of 8th-, 9th-, and 10th-grade students in Minnesota were analyzed by using mixed-model logistic regression.

Results. More than two thirds (68.8%) of adolescent smokers had provided tobacco to another adolescent in the previous 30 days. Mother's smoking, number of friends who smoke, owning tobacco merchandise, number of cigarettes smoked in the past week, source of last cigarette (commercial), and recent attempt to buy cigarettes were associated with providing.

Conclusions. The social availability of tobacco to youth needs further examination. (*Am J Public Health.* 1997;87:649–651)

Introduction

Recent research has documented that tobacco products are readily available to youth. A majority of teenagers responding to surveys report that it would be easy to obtain cigarettes.[1,2] Teenagers who smoke report commercial outlets to be an important source of cigarettes.[2–4] And a number of studies have found that a majority of retail outlets sampled will sell cigarettes to minors.[5–10] In response to growing awareness of the widespread availability of tobacco to youth, efforts to reduce commercial access to tobacco by teens have proliferated.[10,11]

Adolescents obtain tobacco from social as well as commercial sources. One recent survey found that 73.7% of 8th, 9th, and 10th graders who reported having ever smoked obtained their most recent cigarette from a friend or family member, as compared with 22.6% who obtained it from a commercial source.[12] A survey of 9th graders in Community Intervention Trial for Smoking Cessation (COMMIT) communities found that 57% of current smokers reported that a friend or sibling was a usual source of cigarettes, and 17% reported that parents or other adults were a usual source.[3]

Because of the scope of social availability suggested in these and other studies,[13] the behavior of social providers is an important object of study. In this paper, we focus on one category of social providers: adolescents who provide tobacco to other adolescents.

Methods

Data were collected in 1993 as part of baseline data collection for a randomized community trial of a policy-focused intervention to prevent adolescent tobacco access and use (Tobacco Policy Options for Prevention).[12,14] Eighth-, ninth-, and tenth-grade students in public school districts surrounding 14 small cities (population 3235 to 13 132) in Minnesota were surveyed about tobacco access and use. Trained staff administered the survey during school hours, and 91.1% (n = 6014) of enrolled students participated.

Characteristics of the overall sample have been reported in Forster et al.[12] The analyses presented here are limited to students who reported smoking in the previous 30 days (n = 1089). These current smokers included more boys (54.6%) than girls (45.4%), and students in older grades predominated (20.9%, 35.8%, and 43.3% of the students were in grades 8, 9, and 10, respectively).

The outcome variable was provision of tobacco products to other adolescents in the past 30 days. Correlates of provision were identified via mixed-model regression, which allowed for modeling random effects (in this case, community) as well as fixed effects.[15] Because of the dichotomous outcome, we used an adaptation of mixed-model regression that allows specification of a binomial error distribution (GLIMMIX macro in SAS).[16] We started with a model with several potential correlates and singly eliminated terms until a parsimonious model was found.

The potential correlates included demographics, social influences, per-

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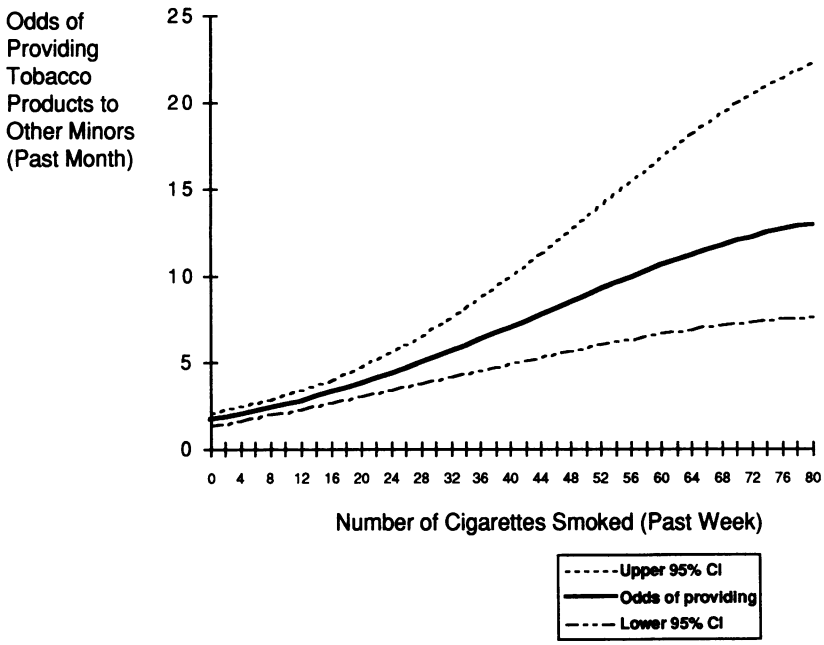
TABLE 1—Final Mixed-Model Logistic Regression: Correlates of Minnesota Adolescent Smokers' Provision of Tobacco Products to Other Adolescents

	Coefficient (SE)	Odds Ratio	95% Confidence Interval
Mother smokes	0.47 (0.18)**	1.60	1.13, 2.26
No. friends who smoke (half to all)	0.59 (0.18)***	1.80	1.28, 2.53
Owns tobacco merchandise	0.61 (0.17)***	1.83	1.31, 2.57
Smoking level (linear)[a] (no. cigarettes/wk)	0.05 (0.01)***	...	...
Smoking level (quadratic)[a]	-3×10^{-4} (6×10^{-5})***	...	...
Source of last cigarette (commercial)	0.55 (0.23)*	1.73	1.10, 2.73
Attempted to buy cigarettes in past 30 days	1.19 (0.24)***	3.29	2.06, 5.26

[a]Continuous variable (see Figure 1 for illustration of effect).
*$P < .05$; **$P < .01$; ***$P < .001$.



Note. Data are based on the results of the mixed-model logistic regression shown in Table 1. Values were calculated with other variables in the model set at their means. The x-axis is truncated at the 90th percentile of the distribution of cigarettes smoked. CI = confidence interval.

FIGURE 1—Relationship between number of cigarettes smoked in the past week and odds of providing tobacco products to other minors.

ceived consequences, perceived availability, sources of cigarettes, smoking behavior, and ownership of tobacco brand items. Demographic variables included socioeconomic status (based on the highest educational achievement of the parent or parents in the home), gender, grade, and residence (in or outside of town). Social influences included smoking status of the student's father, mother, older siblings, and best friend; number of friends who smoke (none or some, half to all), and the student's estimate of the percentage of students in his or her grade who smoke (0% to 40%, more than 40%). Perceived consequences included the student's perception of the severity of school sanctions for tobacco use (classified as high, medium, and low), whether parents would punish the student if caught using tobacco, and the likelihood that parents would catch the student if he or she used tobacco (seven point-scales collapsed into likely [1 or 2], somewhat likely [3 to 5], and not likely [6 or 7]). Perceived availability measures were based on students' estimates of how hard it would be for other students their age to obtain tobacco products from commercial and social sources (collapsed from a seven-point scale into not difficult [1 or 2], somewhat difficult [3 to 5], and difficult [6 or 7]). Variables reflecting the most recent source of cigarettes for each student (social or commercial) and whether the student had attempted to buy cigarettes in the past 30 days were also included. Measures of smoking behavior included age of initiation and smoking level (number of cigarettes smoked in the past week). Since the relationship between age of initiation and quantity of cigarettes smoked and the outcome variable could be nonlinear, we included quadratic terms for these variables in the initial model. Finally, a variable indicating ownership of tobacco brand items (e.g., tee shirt, baseball cap, lighter, jacket) was used.

Results

More than two thirds (68.8%) of students who reported smoking in the past 30 days also reported providing tobacco to another adolescent during that period: 66.3% to a same-age friend or acquaintance, 37.4% to a younger friend or acquaintance, 16.6% to a brother or sister, and 12.9% to a stranger.

Table 1 presents the final mixed-model logistic regression results. The following variables were not correlated with provision: socioeconomic status; gender; grade; residence; father's, older siblings', and best friend's smoking status; initiation age; student's estimate of the percentage of students who smoked; all of the measures of perceived consequences; and perceived difficulty of access through commercial and social sources. Mother's smoking, number of friends who smoke, ownership of merchandise, smoking level, source of last cigarette (commercial), and purchase attempt in the past 30 days were all positively associated with provision. The results for a recent purchase attempt were particularly striking; students who reported such an attempt were more than

three times as likely as students who did not to also report providing tobacco to other adolescents. The relationship between smoking level and provision was positive and slightly nonmonotonic (Figure 1), as indicated by the statistically significant but small quadratic term.

In addition to identifying correlates of providing tobacco to anyone under the age of 18 years, we conducted separate analyses of providing to a brother or sister, a same-age friend or acquaintance, or a younger friend or acquaintance. The results of these analyses closely mirrored those presented earlier, with a few minor differences probably attributable to somewhat less power to detect significant predictors because the events being predicted were less common.

Discussion

Provision of tobacco products to other adolescents was strikingly prevalent among past-30-day adolescent smokers. Much of this behavior seems to be situated within adolescent friendship networks, which may be selected in part on the basis of such shared behaviors as smoking[17] and within which sharing of cigarettes may perform important functions in signifying group membership and standing.[18] While providing to a brother or sister was less common, it may nevertheless represent an important route of access to tobacco products at early ages and early stages of experimentation.

Adolescents who were heavier smokers were most likely to provide to others. Heavy smokers may have the largest supply and easiest access to cigarettes, enabling them to pass some fraction onto others, either by gift or by sale. Several of the same factors that have been found to be associated with adolescent smoking predicted provision of tobacco to other adolescents. These factors included number of friends who smoke, which is probably related to the friendship networks in which provision is reported to occur. The finding that mother's smoking was related to provision may reflect differences in attitudes (adolescents in families in which smoking occurs may tend to have more favorable attitudes toward tobacco provision and use) or availability (easier access to cigarettes at home, making it easier to provide to others). Since fathers are somewhat more likely to work outside the home, mother's smoking may have the greater impact on availability and (as observed here) provision. Adolescent smokers who owned tobacco-related merchandise were more likely than others to provide to other young people. Finally, adolescent providers were likely to enjoy ready availability of cigarettes through commercial sources.

There is a pressing need to address the social availability of tobacco to youth. One important dimension is youth who provide tobacco products to other youth, as illustrated in this paper. The association between availability of cigarettes through commercial sources and provision to other adolescents observed in this study suggests that social and commercial availability may be closely related. Thus, achieving reductions in commercial availability may also result in reductions in the social availability of tobacco.

Interventions to reduce levels of social availability are not well developed. School-based programs could include messages encouraging youth who smoke not to provide cigarettes to their friends. Similarly, public education campaigns might emphasize that it is illegal, unethical, and counter-normative for adults to provide tobacco to youth.

This study is subject to a number of limitations. It used cross-sectional data based on an ethnically homogeneous sample of youth living in small cities and rural areas in the Midwest. Provision by gift was not distinguished from provision by private sale, and provision of cigarettes was not distinguished from provision of smokeless tobacco. Despite these limitations, this is the first study to focus explicitly on provision of tobacco products by youth. Future research should assess the extent and predictors of availability and the most effective mechanisms for reducing both commercial and social availability of tobacco to minors. □

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